REMARKS

The final Office Action of August 25, 2004 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested. Claims 1-7 and 9-20 remain in this application.

Claim 1 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers (U.S. Patent No. 2,665,409) in view of Satake (U.S. Patent No. 4,403,191) and Joshi.

Claim 1 is directed to a method for determining the moisture content of growing substrate comprising:

-determining the volume of a quantity of growing substrate,

-determining the weight of the quantity of growing substrate,

-determining the specific density from the volume and the weight, and

-finally determining the moisture content by comparing the specific density with a table.

Rogers discloses determining the moisture in grain (column 4, line 52), grits, meals, flours, and the like (column 2, lines 20-27). Rogers is particularly useful for determining moisture in organic material comprising hard particles. Rogers does not teach or suggest determining moisture in growing substrate (e.g. soil) nor any material with a texture comparable to growing substrate. For instance, a growing substrate is a compressible/flexible material whereas grain, grits, meals, and flour are not. These different characteristics do not lead one skilled in the art to simply substitute the grains in Rogers for the growing substrate material and expect a comparable result.

Moreover, Rogers discloses a method for *continuously* determining the moisture in a *flow* of the material. The moisture is determined by electrostatic measurements not by measuring weight or volume. In fact Rogers recognizes no relationship between weight, volume, and moisture, especially moisture of a growing substrate.

Column 2, line 46, describes automatically measuring out a constant volume of the material under a constant head of pressure. Column 4, lines 53-55, describes a counterbalancing weight. The steps of measuring out a constant volume of the material and the method of counterbalancing the weight are *independent* of each other and do not relate to the same batch of

material. That is, the weight of the volume described in column 2 is not being measured for a counterbalancing weight in column 4.

Moreover, the act of *counterbalancing* the impulse and pressure of the grain described in column 4, lines 53-55, is not the same as *measuring* the mass or weight of the grain. The grain in Rogers is continuously flowing or falling through a chute – the weight of the grain simply is not measured. Since the weight of the grain is not measured, no number is generated for the weight which value may be used later to determine moisture.

In contrast, the process of the instant claims requires measurement of, and a relationship between, volume and weight to determine the specific density, and then the moisture content.

As mentioned above, Rogers is directed to a *continuous flow* of grain. There is no suggestion that the desired flow in Rogers could be achieved with a growing substrate which is compressible or that a constant volume could be automatically measured in Roger's device.

Satake, like Rogers, is not directed to growing substrates and further relies on *electrostatic* measurements to determine moisture content of cereal grains. Satake measures moisture with a sensor and uses that measurement to correct the moisture content of the grain using density and either measured weight or volume of the grain. Satake does not use weight and volume to calculate density which is then used to determine the moisture content in the cereal grains.

Therefore even if Rogers and Satake could be combined, there is still no reason or incentive to measure both weight and volume of a growing substrate to determine density and eventually moisture content from those measurements.

Moreover it is not clear how one skilled in the art would have modified the continuous process of Rogers with the batch process of Satake.

Joshi is directed to measuring the moisture content of grains, seeds, pulverized products, fruits and nuts, and industrial products. See column 5, lines 30-37. Joshi does not teach or suggest determining the moisture content of growing substrates. As with Rogers, the products of Joshi would not have the same characteristics as the growing substrate of the instant claims.

Joshi discloses the use of various instruments for determining the moisture, such as

dielectric constant, resonant frequencies etc. The data (column 8, line 45) are measured values such a conductivity/permittivity. (See column 8, lines 62-64). Joshi utilizes nondestructive means such as a microwave instrument to determine moisture measurement.

Joshi does not rely on weight and/or volume and/or density to determine moisture. Joshi recognizes no relationship between weight, volume, and moisture, especially moisture of a growing substrate. Contrary to the position asserted in the Office Action, column 8, line 45 is not directed to using density to determine moisture content. This passage relates to using a probe and reflectometer to obtain data that may be used to determine moisture content. Such hindsight application of a single line taken out of context is not a proper basis for modifying Rogers to arrive at the instant claim.

Therefore even if Rogers and Joshi could be combined, there is still no reason or incentive to measure weight and volume to determine density and eventually moisture. Moreover, as with Satake, it is not clear how one skilled in the art would have modified the continuous process of Rogers with the batch process of Joshi.

The claimed invention provides a simple and effective procedure for determining moisture based on easily measured variables without the use of electrostatic measurements or microwaves. Withdrawal of this rejection is requested.

Claims 2 and 3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers in view of Satake and McNeff et al.

Claim 2 is directed to a method for preparing growing substrate with a predetermined moisture content comprising:

-determining the volume of a quantity of growing substrate,

-determining the weight of the quantity of growing substrate,

-determining the specific density of the quantity of growing substrate from the volume and weight;

-determining the moisture content of the quantity of growing substrate;

-calculating the additional amount of water necessary to obtain the predetermined moisture content of the quantity of growing substrate, and

-adding water to the quantity of growing substrate until the weight associated with the desired moisture content is obtained.

For the reasons discussed above, Rogers and Satake are not directed to measuring moisture content using volume and weight of a quantity of growing substrate. Neither is directed to measuring moisture content of growing substrate.

Moreover, Rogers describes a continuous flow and does not teach or suggest adding water until the weight associated with the desired moisture content is obtained. After passing through the counterbalance, Rogers does not keep track of the location of a volume of measured grain in order to add water to it to obtain a desired moisture level.

McNeff is directed to measuring moisture of grain whereby moisture is added to the grain, a sample of grain is removed and ground, and then moisture of the sample is measured using, for example, a capacitance-type sensor. McNeff is not directed to measuring moisture content of a growing substrate or measuring moisture using volume and weight of a quantity of growing substrate.

Rogers, Satake, and McNeff rely on electronics to measure the moisture in a sample. None teaches or suggests measuring weight and volume to obtain the moisture content of growing substrate. Withdrawal of the instant rejection is requested.

Claims 4, 10-11, 17, 19 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Satake in view of McNeff et al.

Claim 4 is directed to an apparatus for determining the moisture content of growing substrate comprising:

-a supply vessel placed on a weighing device to obtain a measured weight of the growing substrate;

-a feed device for feeding predetermined volumes of growing substrate to the supply vessel;

-a discharge device to release the growing substrate from the supply vessel; and

-a computer for determining the moisture content from the predetermined volume and the measured weight.

Satake determines moisture of cereal grains by *electrostatic* measurements using an electrostatic capacity sensor 18. This sensor is used to determine moisture of the grain, not weight and volume.

Although volume and weight may be measured in Satake, these values are not used for moisture determination. That is, Satake recognizes no relationship between weight, volume, and moisture, especially moisture of a growing substrate. Thus Satake has no means (e.g. a computer) to determine the moisture content from the predetermined volume and the measured weight.

Claim 4 requires "a feed device for feeding predetermined volumes of growing substrate to the supply vessel." Satake's feed device 6 is not a device for "feeding predetermined volumes" as required by claim 4. Supply vessel 8 is not a feed device. Thus Satake further does not teach the feed device of claim 4.

McNeff is directed to measuring moisture of grain whereby moisture is added to the grain, a sample of grain is removed and ground, and then moisture of the sample is measured using, for example, a capacitance-type sensor. McNeff is not directed to measuring moisture content of a growing substrate or measuring moisture using volume and weight of a quantity of growing substrate.

Satake and McNeff rely on electronics to measure the moisture in a sample. None teaches or suggests an apparatus to measure weight and volume to obtain a moisture content of growing substrate. Withdrawal of the instant rejection is requested.

Claims 5-7, 9 and 12-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Satake in view of McNeff et al. and further in view of Bajema et al.

For the reasons discussed above, Satake and McNeff are not directed to an apparatus to measure weight and volume to obtain a moisture content of growing substrate.

Bajema is directed a ground-crop harvester control system. Bajema utilizes electrical measurements to measure the height of the material. It is not clear how or why Satake would have been modified to measure the height of the material flowing through it. Moreover, even if so modified, the instant claims require both a feed device having a predetermined volume and a

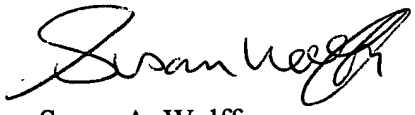
weighing device. Although Bajema shows a sensor, it is used only for speed control or control of the angle of inclination of the fork (10).

Column 8 of Bajema mentions measuring moisture level of the growing substrate to provide optimal operating conditions of the conveyor. No information is provided as to how such readings are achieved. There is no suggestion of a weighing device to weigh a predetermined volume of material to determine the moisture content. Moreover, the conveyor operates in a continuous (not batch) mode. There is no reason one skilled in the art would have modified Satake based on Bajema and arrive the apparatus of the instant claims. Withdrawal of the instant rejection is requested.

CONCLUSION

In view of the above amendments and remarks, withdrawal of the instant objections and rejections and issuance of a Notice of Allowance is requested.

Respectfully submitted,



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